

# **CLAIM AMENDMENTS**

## **Claim Amendment Summary**

### **Claims pending**

- Before this Amendment: Claims 1-32.
- After this Amendment: Claims 1-32

**Non-Elected, Canceled, or Withdrawn claims:** none

**Amended claims:** 1-6, 8-16, 19-25, 27, 29, 30, and 32

**New claims:** none

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### **Claims:**

**1. (Currently Amended)** A method, comprising:  
receiving an input that conforms to a language;  
determining whether the input can be processed by a selective an optimized filter sub-engine which supports only a subset of a query, wherein the optimized filter sub-engine is configured to handle only a subset of the language, wherein the subset of the language does not include all aspects of the language;  
and

if the determining indicates that the input can be processed by the selective optimized filter sub-engine, then directing the input to the selective optimized filter sub-engine for processing in less time than would be required by a general sub-engine which fully supports the query language;

if the determining indicates that the input cannot be processed by the selective optimized filter sub-engine, then directing the input to the a general

filter sub-engine for processing, wherein the general filter sub-engine is configured to handle all aspects of the language; and  
processing the input to derive a result.

**2. (Currently Amended)** The method as recited in claim 1, wherein:  
the selective optimized filter sub-engine and the general filter sub-engine  
are encompassed by components of a single filter engine.

**3. (Currently Amended)** The method as recited in claim 1, wherein  
the determining further comprises recognizing whether or not the input conforms  
to a grammar of the selective optimized filter sub-engine.

**4. (Currently Amended)** The method as recited in claim 1, wherein  
the input-language comprises a query language based on eXtensible Markup  
Language (XML).

**5. (Currently Amended)** The method as recited in claim 1, wherein the selective optimized filter sub-engine includes is a first optimized filter sub-engine which supports only a first unique subset of the query language and a second sub-engine which supports only a second unique subset of the query language, and wherein the method further comprises:

if the determining indicates that the input cannot be processed by the first optimized filter sub-engine, then instead of directing the input to the general filter sub-engine for processing:

determining whether the input can be processed by the first sub-engine or by the second sub-engine a second optimized filter sub-engine, wherein the second optimized filter sub-engine is configured to handle only a subset of the language, and wherein the subset of the language that the second optimized filter sub-engine is configured to handle is different than the subset of the language that the first optimized filter sub-engine is configured to handle;

if the determining indicates that the input can be processed by the first sub-engine, then directing the input to the first sub-engine for processing;

if the determining indicates that the input can be processed by the second optimized filter sub-engine, then directing the input to the second optimized filter sub-engine for processing; and

if the determining indicates that the input cannot be processed by the first sub-engine, and that the input cannot be processed by the second optimized filter sub-engine, then directing the input to the general optimized filter sub-engine for processing.

**6. (Currently Amended)** The method as recited in claim 1, further comprising:

parsing the input to determine if different identify first and second sub-expressions can be identified;

~~if the different sub-expressions are identified, determining if a~~ whether the first sub-expression can be processed by the selective optimized filter sub-engine;

if the first sub-expression can be processed by the selective optimized filter sub-engine, then directing the first sub-expression to the selective optimized filter sub-engine for processing;

~~if the first sub-expression cannot be processed by the selective~~ optimized filter sub-engine, directing the first sub-expression to the general filter sub-engine for processing;

determining whether the second sub-expression can be processed by the optimized filter sub-engine;

~~if a~~ the second sub-expression can be processed by the selective optimized filter sub-engine, directing the second sub-expression to the selective optimized filter sub-engine for processing; and

if the second sub-expression cannot be processed by the selective optimized filter sub-engine, directing the second sub-expression to the general filter sub-engine for processing.

**7. (Original)** The method as recited in claim 6, further comprising:

obtaining a result of the processing of the first sub-expression; and

processing the second sub-expression only if the result of the first sub-expression is true.

**8. (Currently Amended)** A filter engine, comprising:

~~at least one selective an optimized filter sub-engine configured to accept an input that conforms to a language and process the input against a filter table associated with the selective optimized filter sub-engine, wherein the selective optimized filter sub-engine is configured to process only a subset of terms of an input the language, wherein the subset of terms of the language does not include all terms of the language;~~

a general filter sub-engine configured to accept ~~an~~the input and process the input against a filter table associated with the general filter sub-engine, wherein the general filter sub-engine is configured to process ~~only~~all terms of the input language; and

an analyzer configured to determine whether the input can be processed by the selective optimized filter sub-engine and, if so, ~~directing~~direct the input to the selective optimized filter sub-engine for processing or, if not, ~~directing~~direct the input to the general filter sub-engine for processing.

**9. (Currently Amended)** The filter engine as recited in claim 8, wherein the analyzer is further configured to analyze a new filter added to the filter engine and to determine an appropriate ~~matcher~~filter sub-engine with which to associate the new filter.

**10. (Currently Amended)** The filter engine as recited in claim 8, wherein the ~~input~~ language is XPath.

**11. (Currently Amended)** The filter engine as recited in claim 8, wherein the analyzer is further configured to determine whether the selective optimized filter sub-engine can process the input by comparing the input to a grammar associated with the selective optimized filter sub-engine and determining whether the input consists of terms that are compatible with the grammar.

**12. (Currently Amended)** The filter engine as recited in claim 8, further comprising a sub-expression module that is configured to:

determine whether the input consists of different sub-expressions;

if the input consists of different sub-expressions, directing each of the different sub-expressions contained in the input to the analyzer; and

wherein the analyzer is further configured to determine whether each of the different sub-expressions can be processed by the efficient matcher optimized filter sub-engine and to direct each of the different sub-expressions to an appropriate matcher filter sub-engine for processing.

**13. (Currently Amended)** The filter engine as recited in claim 12, wherein a first sub-expression may be of the different sub-expressions is directed to the selective optimized filter sub-engine and a second sub-expression may be of the different sub-expressions is directed to the general filter sub-engine.

**14. (Currently Amended)** The filter engine as recited in claim 8, wherein the at least one selective optimized filter sub-engine further comprises:

a first selective optimized filter sub-engine configured to process inputs that conform to a first subset of the input language; and

a second selective optimized filter sub-engine configured to process inputs that conform to a second subset of the input language; and

wherein the first subset of the language is different from and the second subset are unique subsets of the input language.

**15. (Currently Amended)** One or more computer-readable storage media containing computer-executable instructions that, when executed, direct a computing system to on a computer, perform the following steps:

determining determine an appropriate filter sub-engine to which an input message should be directed for processing against a set of queries;

processing the input message in a selective using an optimized filter sub-engine if the selective optimized filter sub-engine comprises a grammar that supports processing of the input message;

processing the input message in a general filter sub-engine if the selective optimized filter sub-engine grammar does not support processing of the input message; and

wherein:

the input message is in accordance with a query language;

the selective optimized filter sub-engine supports a subset, less than the whole, of the query language; and

the general filter sub-engine supports the entire query language.

**16. (Currently Amended)** The one or more computer-readable storage media as recited in claim 15, further comprising computer-executable instructions that, when executed, direct the computing system to:

~~the step of accepting accept input messages for both the selective optimized filter sub-engine and the general filter sub-engine by way of a single input means so that an input message sending application does not have to distinguish between the the selective optimized filter sub-engine and the general filter sub-engine.~~

**17. (Previously Presented)** The one or more computer-readable storage media as recited in claim 15, wherein the query language is XPath.

**18. (Previously Presented)** The one or more computer-readable storage media as recited in claim 15, wherein the query language is an XML query language.

**19. (Currently Amended)** The one or more computer-readable storage media as recited in claim 15, further comprising computer-executable instructions that, when executed, direct the computing system to the steps of:

~~analyzing the input message prior to determining which filter sub-engine will process the input message, and to determine if parse the input message can be parsed into two or more sub-expressions;~~

~~for each sub-expression identified, determining of the two or more sub-expressions, determine an appropriate filter sub-engine that can process the sub-expression; and~~

~~directing direct each sub-expression of the two or more sub-expressions to the appropriate filter sub-engine for processing.~~

**20. (Currently Amended)** The one or more computer-readable storage media as recited in claim 19, further comprising computer-executable instructions that, when executed, direct the computing system to derive the step of deriving a final result of the input message processing from at least one result of the sub-expression processing.

**21. (Currently Amended)** The one or more computer-readable storage media as recited in claim 19, further comprising the steps of computer-executable instructions that, when executed, direct the computing system to:

determining determine if a first of the two or more sub-expressions sub-expression evaluates true;

proceeding proceed with processing of subsequent of the two or more sub-expressions if the first sub-expression is evaluates to true; and

foregoing forego processing of subsequent of the two or more sub-expressions if the first sub-expression is evaluates to false.

**22. (Currently Amended)** The one or more computer-readable storage media as recited in claim 15, wherein each filter sub-engine includes a set of queries against which input messages directed to the respective filter sub-engine are tried, and wherein each set of queries is unique.

**23. (Currently Amended)** A message processing system, comprising:

means for receiving a message;

a selective optimized filter sub-engine which that supports only a subset, less than the whole, of a message language, wherein the message conforms to the message language;

a general filter sub-engine which that supports all of the message language;

analyzing means for analyzing the message to determine if the selective optimized filter sub-engine is configured to process the message; and

distribution means for distributing the message;

to the selective optimized filter sub-engine if the selective optimized filter sub-engine can process the message; or

to the general filter sub-engine if the selective optimized filter sub-engine cannot process the message.

**24. (Currently Amended)** The message processing system as recited in claim 23, wherein:

the selective optimized filter sub-engine comprises a first set of queries against which the message can be compared;

the general filter sub-engine further comprises a second set of queries against which the message can be compared; and

the first set of queries contains fewer queries than the second set of queries.

**25. (Currently Amended)** The message processing system as recited in claim 23, wherein:

the message ~~conforms to language~~ comprises an XML query language;

the general filter sub-engine is configured to support the entire XML query language; and

the selective ~~optimized filter~~ sub-engine is configured to support a subset of the XML query language, ~~wherein the subset of the XML query language is less than the entire XML query language.~~

**26. (Original)** The message processing system as recited in claim 25, wherein the XML query language is XPath.

**27. (Currently Amended)** The message processing system as recited in claim 23, wherein the selective ~~optimized filter~~ sub-engine further comprises means for increasing message processing performance ~~includes by~~ combining individual filters for use in a single procedure.

**28. (Previously Presented)** The message processing system as recited in claim 27, wherein the means for increasing message processing performance further comprises a hash function.

**29. (Currently Amended)** The message processing system as recited in claim 23, wherein:

the selective optimized filter sub-engine includes comprises:

a first selective optimized filter sub-engine which that supports only a first unique subset of the query language; and

and a second selective optimized filter sub-engine which that supports only a second unique subset of the query language; and

each of the first and second unique subsets of the query language are less than that entire query language;

the distribution means is further configured to direct distribute the message to the second selective optimized filter sub-engine if the first selective optimized filter sub-engine cannot process the message but the second selective optimized filter sub-engine can process the message.

**30. (Currently Amended)** The message processing system as recited in claim 23, further comprising:

means for parsing the message into constituent sub-expressions;

, and wherein the analyzing means is further configured to process individual sub-expression each of the constituent sub-expressions as an individual message and to evaluate sub-expression processing results to derive a result corresponding to the message.

**31. (Original)** The message processing system as recited in claim 23, wherein the message is a sub-expression of a parent message.

**32. (Currently Amended)** The message processing system as recited in claim 23, further comprising means for determining whether a filter in the system is associated with the general filter sub-engine or with the selective optimized filter sub-engine.